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FINANCING BUILD, OPERATE AND TRANSFER (BOT) PROJECTS: THE CASE OF ISLAMIC INSTRUMENTS

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Several member countries of the Islamic Development Bank have embarked upon a program of developing and maintaining infrastructure projects by the private sector in the framework of build operate and transfer (BOT) mechanism and its various variants. The present paper reviews these experiences and the peculiar risks associated with investments in these projects as compared to the risks of traditional manufacturing sector and offers a framework for Islamic instruments to finance BOT projects.

1. INTRODUCTION

1.1 Background and the Issue

In developing countries infrastructures are, historically, financed and owned by public sector entities. However, recently the overall philosophy about the ownership as well as mechanisms of financing the development and maintenance of infrastructure projects has undergone significant changes.[1] The central theme of the new public policies is to enable the private sector to develop, temporarily own, maintain and operate and transfer infrastructure projects. BOT refers to build-operate-transfer model of infrastructure project financing. In the present paper we use it as an umbrella concept to cover most other variants as summarized in appendix-1.

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[1] This state has emerged largely due to the fact that in the past financing long-term irreversible capital expenditures in infrastructures were undertaken through public debts. It was justified in perspective of inter-generational justice and equity. However, experience has shown that at its best, borrowed money is exposed to mismanagement in allocation. Furthermore, the situation of inter-generational injustices and inequities has been perpetuated and aggravated by the dominance of the interest-mechanism. As a result, servicing interest-based debts has become the single largest expenditure (cost) item in public budgets in many developing countries. Cutting the cost of interest payments has, therefore, become the top priority objective of economic policies. Such policies are also expected to enhance macroeconomic efficiency and ensure justice and equity between generations. Thus these policies are apparently consistent with the principles of Islamic financing.

These models imply that developing country governments can promote infrastructures without resorting to mobilize debt finance. Nevertheless, due to their irreversibility and immovability, even private infrastructures are ultimately public properties. As such, from the public authority's perspective, for example, assigning a concession agreement of a project for development and operation to a private party for a specific period, no doubt, functions as a financing arrangement. However, the projects themselves continue to need financing. Therefore, it is noteworthy that in these new experiments the emphasis on using interest-based debt finance has simply shifted from the public to the private sector. Since, sovereign governments are in general able to borrow at lower rates as compared to private companies, the burden of private projects could be higher for the economy as compared to publicly owned projects even though governments may not have any obligation specifically with respect to the private projects. The critical question of reducing the interest cost of debts on the economies is thus far from being resolved with the new initiatives.

Given the risky nature of infrastructure projects, and due to scarcity of equity, it is often suggested to rely on a maximum amount of debt finance. The present norm for infrastructure finance is over 70/30, debt/equity ratio. Equity thus covers only a small fraction of the total funds needed. Qureshi (1999) estimates that during the next decade the OIC member countries will need US$ 700 billion to develop their infrastructures. Even if the equity component of this requirement is kept as low as 20%, the countries will need US$ 140 billion during the decade or 14 billion per year during the period. Compared to the present availability of funds, this amount of equity is huge. The remaining funds (US$ 560 billion or 56 billion per year for 10 years) have to come as debt through installment sale, *istiṣnā'*, *salam*, leasing and suitably engineered sharī'ah compatible quasi-equity capital. The amounts required are not only large but are also very long-term in nature, sometimes for 35-40 years. The funds of such a quantity and duration can only be available from international long-term investors, such as pension funds, insurance funds and mutual funds.

From an Islamic perspective, the creation of debt finance is restricted to the availability and/or generation of real assets and services. By virtue of this simple but fundamental economic difference, Islamic finance is capable to assume the useful functions of conventional debt finance while at the same time avoiding the wrong diversion in allocation, and without creating a pyramid of debts and inter-generation inequity. However, since under the Islamic system debts cannot be sold using conventional procedures, the resultant IOUs get permanently embedded with credit, market and liquidity risks. As a result, it becomes extremely difficult for the Islamic financial institutions to confront the challenge of providing the required long-term funds for the development of infrastructures.

The present paper has three objectives. First, in order to understand the uniqueness of risks involved in infrastructure investments, the paper aims at presenting a critical overview of the factors, which make investments in infrastructures unstable as compared to the investments in the more traditional areas, such as manufacturing. Second, the paper aims to briefly discuss and analyze the salient features of the new initiatives in financing infrastructure projects as practiced in a number of countries. Finally, the paper aims at putting forward some considerations for exploring liquid Islamic financial instruments. Such instruments can be further discussed, screened and refined for mobilization of funds from international capital markets to finance the development of infrastructure projects in the member countries.

In section two we review the salient features of infrastructure projects, which make such projects riskier as compared to, for example, the traditional manufacturing projects. Section three critically examines some features of the new initiatives as applied in some OIC-member countries. Section four elaborates on how Islamic modes of financing could possibly be utilized simultaneously in the framework of the security package of an infrastructure project. Section five discusses the premises of some proposed Islamic financial instruments to attract funds from international long-term investors. The conventional equity instruments are in general found to be consistent with the Islamic investment requirements. Therefore, the paper does not elaborate on such equity-based financial instruments. Section six concludes the paper.

2. FACTORS CONTRIBUTING TO INSTABILITY OF INVESTMENTS IN BOT PROJECTS

The cost of finance is very important for successful development of public utility projects. This cost is affected by a variety of factors. The present section provides for a brief critical overview of the unique factors determining the risks and thus the cost of infrastructure finance. By considering such factors and by unbundling them, more appropriate sources of funds can be explored. In fact, the basic advantage of the involvement of the private sector in the process of developing infrastructures is that such an involvement facilitates unbundling of various risk and cost factors.

Recourse to public budget: With respect to public budget, all traditional infrastructure projects are full recourse in nature. In the past, governments in developing countries used to promote almost all infrastructure projects by a full recourse to the public sector assets through the general obligation public budgetary revenues. In many developing countries, this traditional system is still dominant. In this system, the infrastructure projects are fully presented in the balance sheet of the public sector and financed from the public budget, mostly through borrowing

from multilateral institutions. The risks and costs of individual projects are bundled together economy-wide (and their burden is passed on to the public including future generations in the form of public debt, taxes and inflation.) Although some projects are termed as "white elephants", yet, various risks of the full recourse general-obligation projects are rarely segregated. Hence the risks of specific individual projects are never fully exposed and managed.

An increasing number of projects in several countries are limited-recourse or non-recourse in nature. In the limited-recourse projects, the risks of projects are unbundled to a limited extent and shared between the private owners of projects and general obligations public budget in what is known as the "public-private partnership". Most new private infrastructure projects are non-recourse in nature. In these cases, individual projects are separated from the balance sheet of the public sector and shifted to the private sector. The risks of individual projects are unbundled through various contracts. The burden of such projects is fully passed on to the public through markets in the form of competitive prices. The financial accruals go to the private sponsors but public authorities also share in these accruals through fees and taxes. The financial viability of such projects is assumed to depend entirely on their own cash flows, nature of their assets and liabilities i.e., these projects must "stand-alone" as independent economic entities. In general, the cash flows from the assets of the projects and sovereign guarantees protect the interests of equity and debt providers.

Although governments play critical role as facilitators, the non-recourse, stand-alone projects have no direct claims on the public sector's assets and do not put any burden on the general obligation budget of the government. *This is the central reason why governments have been encouraging the role of the private sector in infrastructure development, i.e., financing a public good through an off balance sheet method from the perspective of the public sector.*[2] Despite a growing interest in international investments in such stand-alone projects, recently several cases of instabilities have been reported, adding to the risks and hence cost of finance.[3] Some of these factors are discussed below.

Revenues and remittances mismatches: Infrastructure projects generate revenues in local currency. For remittance of capital and profits, the investors rely upon

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[2] The off-loading process of maintenance and/or improvement of old infrastructure projects and the development of new projects from the public sector's balance sheet takes numerous forms of ownership, management, operational and maintenance structures. Some of these contracts are profiled in appendix-1.

[3] India: Dabhol power project re-negotiated; Pakistan: contracts of IPPs unilaterally cancelled by the government; Indonesia: conflicts between IPPs and the government; Argentina: conflict of government with water companies; Thailand: Bangkok toll-road project and government dispute on toll rates; Venezuela: government vis-à-vis telephone companies disputes are only few of the many examples (See, Wells 1999).

government guarantees implemented by central banks. If the economy performs well and enough export earnings are made, the system of the government guarantees works. Good performance of an economy at the time of the contract does not eliminate the risks of bad foreign exchange earnings in the future as recently evidenced by international investors in the Southeast Asian infrastructures. But since governments cannot print foreign currency, due to the foreign exchange constraints on remittances, governments in several countries have resorted to unilateral cancellation of concession contracts. Thus, the currency mismatch between revenues and remittances poses critical risks to foreign investments in infrastructure projects. There is no easy way to mitigate this risk except for guarantees from multilateral institutions.

Market risks: Infrastructures require irreversible and long-term capital investments. Once constructed a road cannot be dismantled. Neither can it be physically moved to a new location, nor its services can be marketed in other locations. Similar is the case with most other infrastructure projects. Thus, the market risk faced by infrastructure projects is really critical, as it is only the localized demand for the utility, which determines its revenues. The Take-or-Pay Contracts (see, appendix –1 for a brief description) are often used to control this risk. With this contract, the public authority as purchaser of the services agrees to pay specified price for specified quantity of the public utility services for a specified time. This happens even if sometimes the public utility may not take delivery of all the services for which it makes a guaranteed payment. This is analogous to paying rents for an asset, the usufructs of which are not utilized. Thus in many cases, it creates a captive capacity of the public utility projects causing a major macroeconomic instability as evidenced in many countries recently.

Limited indispensability: Historically, even in most open economies, foreign investment is encouraged only when it is indispensable. For developing countries this indispensability is related to the packaged nature of foreign investment as it brings capital, technology, and managerial, marketing and entrepreneurial ingredients. In many industries such indispensability continues even after the establishment of manufacturing plants, as technological and managerial refinements and marketing are ongoing processes. In such industries the indispensability of foreign investors is felt for a longer period. This is however, not the case with most public utilities. When an infrastructure project does not exist, foreign investment becomes indispensable. But once a road or a bridge or any other infrastructure project is established, foreign investors become "obsolete" and become a target of nationalistic sentiments. Thus the quicker the "obsolesce" is expected to appear, the riskier the project is considered to be.

Public exposure: Unlike manufacturing goods, public utilities are exposed to public eyes and attention continuously as the public commutes everyday, uses electricity and telephone services frequently. Thus the ownership of these utilities

is completely exposed to the public's scrutiny and in many cases unfair criticism. This further strengthens the exposure to "obsolesce". Even a genuine increase in the utility prices may add fuel to the public sentiments against the "foreign owners". Negative politicking fuels public sentiments. Such tendencies expose foreign investors and consequently the host economies to serious risks.

Ambiguity of financial obligations: Are foreign investments in infrastructure projects debts or equities? These investments resemble equities because, these do not appear on the balance sheet side of the public sector as fixed rate liabilities like interest-based debts. Rather these are reported as foreign investments. Multilateral agencies do not consider these as public liabilities while considering the credit-worthiness of recipient economies. However, such is a misleading characterization of these investments. The reality is that in the final analysis, these investments are foreign exchange denominated public sector loans mobilized at the rate of equity cost by a sovereign country through the private sector. In case of equity investment, the dividends and their remittances will move with the profits accrued from the projects. In such a case, obligation to pay is closely linked with the ability to pay. Through the take-or-pay and power purchase and other similar agreements a public utility guarantees the purchase of, for example, electricity for a fixed dollar-indexed price. But due to the dollar-indexed guaranteed rate of return by the public authorities, in the new investments in infrastructures, obligation to pay is no more linked with the ability to pay. This causes crisis as political risks replace commercial risks.

Complexity of contract cobwebs: Infrastructure finance is known as "contract finance", i.e., it cannot be provided without the cobweb of contracts.[4] Due to the existence of so many contracts, contract enforceability becomes an important risk factor. Actual revenue realization by the investors depends on the enforceability of these contracts. Thus correct revenue forecasts for such complex projects become almost impossible. Furthermore, procuring projects through such contracts also poses a moral hazard problem as sub-standard projects may be supplied.

Lack of macroeconomic policy coordination: The lack of coordination in macroeconomic policies is quite common in developing countries making the sources of input supply and demand for forecasted revenues unreliable in several cases. There are several examples of such lack of policy coordination within

[4] A good example of such contract cobwebs in one of the most important infrastructure projects with a significant role of the private sector is the KLIA (Kuala Lumpur International Airport Sepang) opened for traffic in June 1998 at a cost of RM 10.5 billion. The project involved 26 design and 80 construction contracts. At least three major project consortiums were formed for the main terminal, satellite terminal, and transit system. This project is much more complicated for a proper description at this stage. Some more information can be downloaded from http://www.jaring.my/airport/klia2/klia-details.html.

government departments and between different governments, which expose projects to more risks.[5]

Lack of capital markets and instruments: The best institutional arrangement to overcome the cost of infrastructure finance by controlling risks is to make the values of assets divisible into financial instruments and spread these among investors through capital markets. Once risks are decomposed into smallest possible components and financial instruments are designed keeping in view mitigating such risks, such risks can be controlled effectively and the cost of finance can be reduced. In this regard, there are severe limitations in developing countries. These limitations are both in the areas of financial instruments and markets on the one hand and technology and communications on the other. Islamic financing is particularly constrained by the lack of *fiqh* compatible financial exploration processes. Keeping in view these considerations, the development of Islamic financial instruments is of foremost importance.

3. EXPERIENCE OF SOME OIC-MEMBER COUNTRIES WITH BOT PROJECTS

In this section we briefly discuss the experience of some OIC-member countries with financing private infrastructure projects. This is expected to highlight the economic peculiarities of such cases so that these can be put in perspective of Islamic financial instruments.

General trends in OIC-member countries: The stand-alone private infrastructure projects (toll roads, railway tracks, power projects, seaports, water projects, bridges, waste treatment plants etc.) are now common in member countries. A profile of such actual and potential projects in the member countries is given in appendix-2, charts 1-5.[6] We can draw a number of conclusions from this information.

First, charts-1 and 2 provide information on the ownership pattern of the projects in percentages as well as in dollar terms. We can notice that where a dozen schemes are reportedly in use, BO (build-operate) and BOT (build-operate-transfer),[7] are the most popular. Indeed, in general the ownership patterns are quite

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[5] For instance, one country recently opened a high profile toll-road project, which was completed at a foreign exchange cost of 1.2 billion dollars. Soon afterwards an import duty was imposed on imported cars. It is common to notice that in developing countries the public sector controls the supply of furnace oil to the independent power producers. The governments frequently raise these prices, yet the increases in the electricity rates are blamed on the power producers.

[6] All charts are based on the data provided in EP&SP (1998), which in turn is based on the World Bank Database.

[7] See appendix-1 for the description of these and other terms.

diverse. These ownership patterns are bound to have important implications for the suitability of different forms of finance and their corresponding risks.

Second, chart-3 and 4 provide information on the sectoral spread of private infrastructure projects. It can be seen that power and transport are most important both in dollar terms and in terms of number of projects.

Third, chart-5 provides information on the capital-intensity of these projects. It can be seen that gas pipeline projects are the most capital-intensive followed by telecommunication projects.

Finally, in five countries, namely, Indonesia, Malaysia, Pakistan, Turkey and Morocco there are substantial number of such projects. The number of Muslim countries having some experience with such private infrastructure projects is also large. At least 48 Muslim countries have so far acquired experience in some form with such projects and this number is reportedly growing.

Basis for harmonization of interests - the case of Algeria: The historical relationship between international investors and host countries can best be characterized as one of reciprocal fears – that of controlling national resources by foreigners on the one hand and the probability of expropriation induced by such fears on the other. But, since resource complementarity between the host and home countries of international investments have always existed, a number of countries have explored compromise solutions to make the interests of the two parties compatible. During the early seventies, Algeria has remained in the forefront of such host countries of foreign investments. As a result, the production-in-hand arrangement was innovated in Algeria during the seventies. This arrangement was for procuring manufacturing projects, but its format is also very relevant for infrastructure projects as far as incentive compatibility and controlling of risks is concerned.

In a product-in-hand contract, the foreign investor takes two basic responsibilities: (i) Construction of the plant on turnkey basis, and (ii) developing local technicians and management expertise to takeover the control of the project at a time when the project reaches a production stage as specified in the contract. In this way, the foreign investor takes the risk of making the project successful in the hands of the local manpower. The motivation for the foreign party for involving in such an arrangement is the deferred sale of its skill-intensive assets. The interest of the host country in the contract lies in its operational nature, which establishes an input-output relationship for the domestic sector and ensures domestic resource utilization without any risk of foreign control.

The production function that evolves from the activity depends on two factors. First, the local firm (mostly influenced by national economic priorities) determines

the targets regarding the nature, quality and quantity of the planned production. Second, the foreign firm, which undertakes to establish the production relationship tries to meet the specified requirements of the contract, enjoys the independence in decision-making with regard to the choice of inputs and other factors involved in the production process. However, the decisions of pricing the products of the project are made by the host party.

Algeria has extensively used the principle of delegating the investor responsibilities to a foreign firm to resolve the problems of industrialization and resource utilization posed by underdevelopment. The difficulties of national industrialization (viz., mastering the project implementation process, achieving the capabilities to pursue a complex production process, using an unfamiliar technology etc.,) have been overcome. In this type of solution, the foreign enterprise, in-spite of the commercial framework within which it operates, assumes responsibilities and takes risks that are related more to direct investment than to a sale transaction.

The experience has also faced a number of difficulties. Most of the problems on the operational side of these arrangements are related to performance requirements, guarantees and bargaining strengths of the contracting parties. As the Algerian experience shows, in general, foreign firms are reluctant to performance obligations, they do not provide full guarantee of their performance. Guarantees usually range between 5 - 10 percent of the value of the contract, which does not match any mishaps in the project. In some cases, it may even mean complete failure of the project. Yet, in most cases of negotiations the foreign firms always keep an upper hand.

Pioneering experience with BOT projects - the case of Turkey: The Built-Operate-Transfer (BOT) is in fact a core mechanism around which most other contracts are built. The BOT method can be considered as a Turkish innovation[8]. During the early eighties, when privatization started, the need was felt to harmonize the benefits of private capital inflow with long-term national interests in projects of vital national importance viz., electricity, atomic reactors, bridges, roads, airports, seaport, fertilizer etc. Under the BOT scheme, the State Planning Organization of Turkey and State Economic Enterprise encourage foreign investors to form BOT concession companies. These companies then receive (concession)

[8] It is suitable to provide a precise definition of the scheme as adopted by the Turkish government. "The BOT model is a method of financing infrastructure projects. In this mode, a consortium bidding on a project shall design the project, raise and secure the financing for the construction, construct, manage, operate and maintain the project against host government's guarantees to purchase the good or service over a given period to cover debt service, operational expenses, repatriate the paid-in equity and to provide a return on equity. At the end of the period, facilities are transferred to the host government in good operating condition, without any cost and free from any liabilities" http://www.treasury.gov.tr/english/ybsweb/energy.htm

contracts from the public sector to build specific projects on the terms and conditions laid down in the contract. Two most important terms of the contract are: (i) the public sector's guarantee to purchase the product of the project, e.g., for electricity projects, through a power purchase agreement (PPA), and (ii) public sector also guarantees to purchase the project whenever so desired by the contractor companies. The general approach has however, been one of encouraging the contractors to operate the project for a longer period. On the other hand, if the government desires the contractors to sell their interest, it may have such options specified in the contract.

There are obvious advantages from the BOT scheme for both the contracting parties. For the government as a local party, the BOT is considered only a win-win situation. The advantages are obvious. (i) The objective to include private interest in public sector projects is achieved. This guarantees better operation of the public utility projects. (ii) The involvement of the government in vital economic activities is reduced to the status of a mere supervisor, facilitator and protector relieving public resources for other activities, which the private sector cannot provide. (iii) The BOT scheme does not allow the contractors to fully control the projects and related resources until and unless the government's consent is achieved. So the risk of foreign control of national resources in the longer-run has been eliminated, and (iv) the transfer of technology is made possible by the BOT contracts without a substantial immediate foreign exchange involvement.

For the foreign contracting parties, the BOT scheme has again clear advantages. These advantages are related to the sale of technology, and entrepreneurial services. In addition, profits from the operations of the BOT projects guaranteed by the government are often substantial. However, these contractors have apprehensions too. Their fears are related to transfer risks, contract frustrations and expropriation etc. Nevertheless, the BOT system has expanded fast in Turkey and successive governments have increased the coverage of guarantees, thus removing most of the fears of the investors.

Re-financing BOT projects - the Turkish RSBs: BOT projects are ultimately transferred to the public sector. Thus, considerations for re-financing of such projects remain an ongoing concern of the public sector. The Turkish experience with an institutional arrangement in this regard is again relevant. To support the BOT initiatives and other reforms, in 1986, the Public Participation Fund (PPF) was established. The PPF revenues are raised by a mechanism of Revenue Sharing Bonds (RSB), through which the private sector participates in the revenues of infrastructure services such as bridges, dams, power plants, highways, telecommunication projects etc.

The proceeds of the RSBs are not guaranteed but are calculated annually on the basis of the revenues accruing to the infrastructure projects. Initially, the RSBs

were issued for one year. Now these are issued for six years. The funds of the PPF are utilized for re-financing old projects as well as for financing new projects. For, example, the Fatih Bridge in Istanbul was partially financed by the funds of the PPF. (However, it may be noted that reportedly, the PPF is being merged with the Privatization Fund).[9,10]

The RSB-based PPF revenues are expected to have long-lasting contribution to the socio-economic development of Turkish economy in different respects. (i) The financial resources to be allocated to the infrastructure sector are accelerated through the RSB mechanism. Before this experience, infrastructure projects were mostly unattractive for private financiers. Public sector had to come forth. As a result, deficit financing and external debt financing becomes a necessary evil. This does not only lead to dependency of the national economy on external resources, but also disturbs the optimal debt/equity ratio of the entire economy. The new sources of private revenues will certainly overcome this problem and consequently will have a sustained positive effect on the overall economy. (ii) The utilization of funds is greatly accelerated and made subject to more rigorous cost-effective procedures. This not only avoids the problems associated with cost over-runs particularly, of the huge infrastructure projects, but also ensures quick improvement in the highly needed infrastructure services. This will also add to the overall efficiency of the national economy.

In addition to these inherent advantages of the scheme, it is flexible for policy changes to suit different objectives of national economic policies. For example, in Turkey, part of the revenues from the RSBs is invested in the remote parts of the country in labor-intensive schemes. The funds can also be spread out with public funds, and thus have efficiency effects on such public funds. Therefore, the general validity of the RSB scheme for economies where infrastructure facilities are underdeveloped is obvious. However, it may take many years of familiarization before the lesser-developed economies are convinced to implement similar initiatives. It also seems to be linked to a reasonably developed capital market as well as a responsive private sector to make the scheme more successful.

The reasons for caution – Pakistan's uneasy relations with IPPs: In view of the peculiarities of private infrastructure projects discussed above, BOT arrangements are often considered to be less risky, thus superior as compared to permanent ownership such as provided under Build-Own-Operate (BOO) facility. Yet, one of the largest (US dollars 1.5 billion, about Rs.80 billion at 1999 exchange rates)

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[9] See, http://www.treasury.gov.tr/english/ybsweb/energy.htm and related links.

[10] The RSB scheme has been a success mostly due to two factors. Firstly, a large section of the population took interest in the bond as the bond was considered to be an alternative to traditional interest-based government borrowing. Secondly, the success of the RSB may also be due to the preference of investors for a stable source of income as compared to the volatile interest income.

private power company in the developing world, namely, Hub Power Co., was initiated in Pakistan as a BOO project.

Despite meeting the major requirements of a solid security package, namely, multilateral financing, guarantees, host financing and host government guarantees etc., a dispute between the project's sponsors (Saudi and British) and the Pakistani public utility (Water and Power Development Authority - WAPDA) went on for a long time. The main source of the contention was a single agreement namely, the PPA between WAPDA and the Project Company on the tariff rates. As a result of the dispute foreign investment in the country suffered a setback.

The experience of Hub Power Co. provides a number of lessons. First, economic and statistical projections about the revenues of a specific project are not enough. Since such projects do not generate foreign exchange earnings, it is vital to carefully study the foreign exchange implications of capital repatriation resulting from the project. In the case of Hub Power, this implication is tremendous for the economy as it is a BOO project. Second, BOO allows permanent ownership of projects. The sponsors might have expected that they would be able to sell a large part of the company in the stock markets. This could not happen due to the depressed stock markets as well as due to the dispute. A careful forecast about the performance of capital markets is thus also very important, particularly if a BOO scheme is to be adopted[11]. Third, the PPA dispute shows that unrealistic tariff rates could destabilize even otherwise sound security package. Finally, it is obvious that such projects need a lot of debt. It is often recommended that since the risks are substantial, sponsors should mobilize large amounts of debt finance, particularly, through the multilateral financial institutions[12] having good bargaining strength.

Incentive compatible contracts – the Malaysian North South Highway:[13] Among OIC-member countries, Malaysia has accumulated significant experience in implementing BOT projects in different sectors of the economy. The North-South Highway (NSH) project provides a representative case of such experiences. This 900-km road links the country's north on Thai borders with the south on the Singaporean borders. Thus, it is one of the most important highways in Malaysia. We highlight three important features of this project, which is constructed as a BOT project.

First, in case of infrastructure projects, normally, it is the government, which initiates the idea of a project and motivates the private sector for its promotion. In the case of the NSH, the private sector played a crucial role in highlighting the

[11] Keeping in view such considerations World Bank (1994) recommends BOT type of contracts for economies, which do not have developed capital markets.
[12] See, Wells (1995).
[13] This profile is based on information given in Walker & Smith (1995).

usefulness of the NSH as a BOT project, and the government was convinced about it. The NSH was constructed in the early eighties in traditional ways as a public sector project, but the project was never fully completed in that form. In 1985 United Engineers Malaysian Bhd (UEM) submitted to the government a concept proposal on how the NSH can be improved tremendously as a BOT project. The 30 years BOT concession was awarded in 1988 and the project was completed in 1995.

Second, the debt/equity structure was 90:10 and the initial cost was calculated at RM 3.44 billion, which was subsequently, increased by RM 976 million. The debt comprised of Malaysian government support loan of RM 650 million, export-credits, commercial bank loans and revenue bonds.

Third, the financing arrangement for the project provides a good example in financial engineering with incentive-compatible contracts. The Project Company had to assign the construction to sub-contractors. Procurement through sub-contracting exposes the project to the risk of quality and contract enforceability. To overcome this dilemma, interests of the sub-contractor need to be aligned with the quality of assets to be constructed. The NSH was able to overcome this problem by designing incentive-compatible compensation schemes for sub-contractors. Accordingly, the Project Company and the sub-contractors contractually agreed that 87% of the contract value should be paid in cash and 13% in the form of stocks of the NSH Company after its completion.

The above cases are good examples of the development of infrastructure projects through the private sector. Before concluding this section we need to make some observations. First, these examples can be extended to all forms of infrastructures, which generate revenues. By extending the arrangements to such areas the governments introduce private sector efficiency in the projects. As such, the governments' own revenues can increase, which can be used for financing projects that cannot be taken up by the private sector. Second, although these projects are taken up by the private sector, still due to the nature of infrastructures, the facilitating role of the government is necessary for the efficient implementation of the schemes. Third, although the government is relieved from the immediate burden of financing these projects, the economy as a whole is not relieved. The burden is simply transferred to the private sector. As the benefits of a successful project can be high for the economy, the cost of an unsuccessful project can also be very high due to the cost of private capital. Finally, debt plays a crucial role in financing BOT projects. This debt can be replaced by various Islamic modes of finance as discussed in the remaining part of the paper.

4. ROLE OF ISLAMIC MODES OF FINANCE IN THE SECURITY PACKAGE OF A BOT PROJECT

In this section we discuss the role of Islamic modes of finance in the security package of a BOT project. The purpose is to highlight that there is a need for the utilization of various forms of Islamic modes to finance BOT projects.

Security package: the basis of finance: For reasons already discussed in the previous two sections, there is a critical need of well-defined contracts to arrange financing for infrastructure projects. Therefore, infrastructure project finance is often called as "contract finance". The security package[14] provides the crucial framework for raising finance for the specific projects. Some of the reasons, which make security package the basis of raising finance, are given below.

- BOT projects are stand-alone non-recourse projects in which the sponsors only risk their equity, which is often as low as 10 % (as mentioned in case of the Malaysian NSH), and the governments risk nothing.
- The Project Company owns only the revenues of the project, not the project itself. Therefore, the assets could not constitute the basis for raising finance.
- Investments are irreversible. The assets of the project are immovable and cannot be dismantled, separated and sold.
- The revenues of the project constitute the basis for it's financing. But the revenue fixation, collection and administration involve several complicated contracts involving several parties.
- The enforceability of the contracts plays a crucial role in the forecast for revenues of the project. This makes the forecast unique. The finance providers get extremely concerned with the enforceability of these contracts and do not rely on only demand forecasts for financial flows.
- Thus the web of contracts worked out in the security package is factually the basis of the BOT project finance. Therefore, the importance of the security package makes BOT financing distinct as compared to financing manufacturing projects, for example.

The projects need short as well substantial long-term, debt, equity, and quasi-equity finance. Due to the predominance of political *force majeure,* most analysts suggest sponsors to minimize the use of their own equity and maximize that of debt, particularly, involving multilateral development finance institutions. Historically, the sources of funds for such projects have been sponsors as equity owners; export credit and guarantee agencies, equipment suppliers, commercial banks, multilateral development financing and guarantee agencies, and local

[14] Package of obligations, pledges, mortgages, deposits, liens, guaranties etc., given by the project company and its sponsors and the government and other parties interested in the project.

governments. Bond issues are important sources of long-term funds in the developed market economies. Since capital markets in the developing countries are less developed, projects cannot raise funds through bond issues. Thus, institutional sources of funds such as banks have to play important role.

Equity, which is seen in harmony with Islamic financial principles, constitutes only a small part of infrastructures finance. Mezzanine (quasi-equity) financing functions as a bridge between equity and debt in the long-term relationship in the sense that debt is converted into equity. Since in infrastructure projects, debt sometimes goes up to 90%, the important concern is to find an Islamic substitute to replace such a huge amount of interest-based debt in the capital structure of a BOT concession company. This is a very challenging subject. It is well known that Islamic finance creates debt through *Salam, murābaḥah*-based installment sale, leasing and *istiṣnā'*. The Islamic alternatives to conventional debt and mezzanine finance must be based on these Islamic modes and any suitable modifications therein.

Outlines of a security package: Keeping in view the above points, Islamic finance for BOT projects can be efficiently raised but only in the framework of a well-developed security package. Specific packages could only be formulated for specific projects keeping the requirements of such projects in view. However, in Fig. 1, we propose a general outline of a security package for Islamic financing of BOT projects. In Exhibit-1, we outline how the various Islamic modes of financing can be utilized simultaneously. Some explanations are provided in the accompanying notes given in appendix-3.

Fig. 1 A Security Package for Islamic Financing of BOT Concession Projects

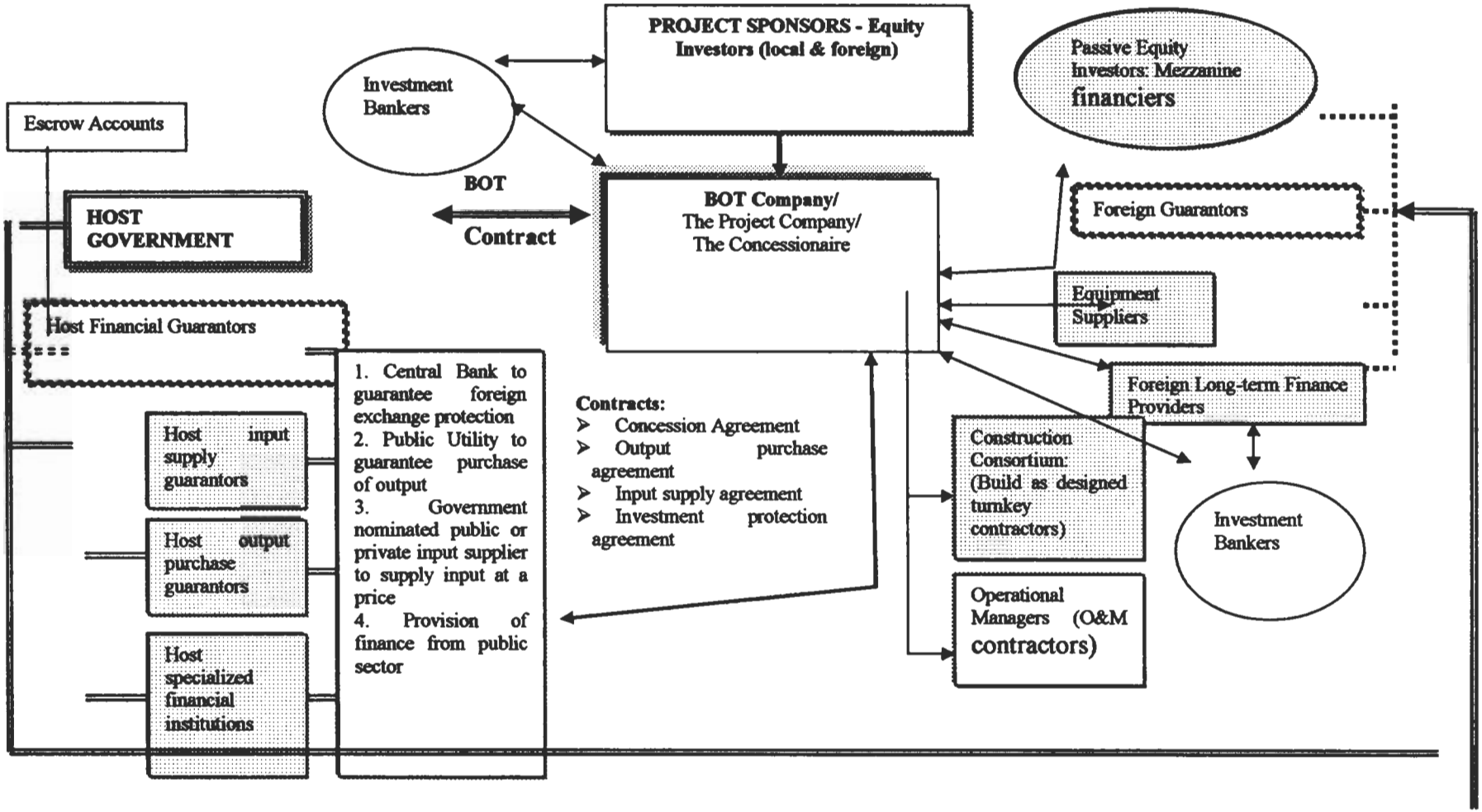

Exhibit - 1: Components of a Security Package under Islamic Modes of Finance

CONTRACTS	DESCRIPTION	Notes[15]
I. SHARING	**Sharing modes comprise of net income (profit) or gross income (revenue) sharing**	
• **Profit/net income sharing**		1
1. *Mushārakah* capital	♦ Owner's share capital ♦ Capital of institutional investors	
2. *Muḍārabah* capital	♦ Investor's capital, brought in by fund managers ♦ Project sponsored SPVs	
• **Output/revenue sharing**		2
1. Output sharing variant - 1	Traditional output sharing (not much relevant for infrastructures)	
2. Output sharing variant - 2	Sharing in output/revenue, particularly by durable asset participation	
3. Revenue sharing	Often through financial instruments	
II. DEFERRED SALES	**Modes where either price or object of sale or both are deferred**	3
• **Object Deferred Sale (ODS)**	**Pre-paid procurement of goods, assets, projects and usufructs**	
1. Pure *bay' al salam*	Pre-paid procurement of commodities (project inputs and outputs)	
2. *Istiṣnā'* Variant –1	Pre-paid procurement of tailor-made goods, assets and projects	
3. *Ju'ālah* Variant –1	Pre-paid procurement of services, for example, for exploration of natural resources	
4. *Ijārah* Variant – 1	Pre-paid leases	
• **Price Deferred Sale (PDS)**	**Price deferred procurement**	4
1. Pure *bay' al mu'ajjal.*	Installment sale/purchase of goods, assets and projects, goods delivered, payments deferred	
• **Price & Object Deferred Sale (PODS)**	**Payment of price and delivery of object to take place in a future spot basis**	4
1. *Istiṣnā'* Variant - 2	Price deferred procurement of tailor-made goods, assets and projects	
2. *Ju'ālah* Variant - 2	Price deferred procurement of services, for example, for exploration of natural resources	
2. *Ijārah* Variant – 2	Rent paid upon using services (most common form of hiring)	
3. *Ijārah* Variant – 3	Rent deferred lease of an asset yet to be developed	
III. SHARING-CUM-SELLING	**Hybrid modes which combine sharing and selling**	5
1. D. *Mushārakah*	The shares of the financier are taken over by the firm through his share in profits/output/or revenue gradually or through an escrow account.	
2. D. *Muḍārabah*		
3. D. Revenue sharing		
4. D. Rent-sharing		
5. Hire-purchase	Lease with an embedded option for the user to purchase the asset at the end of the lease period	
IV. EMBEDDED OPTIONS	**The transformation of long-term debts into real assets can enhance liquidity of such contracts**	5
1. Embedded leases	Conversion from leases to other contracts	
2. Embedded *istiṣnā'*	Conversion of *istiṣnā'* debt into real assets	
3. Embedded installment sale	Conversion of installment sale debts into real assets	
V. PUBLIC SECTOR CONTRIBUTIONS	**To encourage private infrastructure projects, governments' extend support in various forms**	6
DHAMAN (GAURANTEES)	**Generally guarantees play a very important role in the security package of a project**	7
1. Output purchase	Such as power purchase and take-or-pay agreements	
2. Input supply	To keep the price of utilities stable, the critical input need to be provided at a stable price on long-term basis	
3. Foreign exchange	Normally, central banks must guarantee foreign exchange for the repatriation of capital and return on it	
4. Non commercial risks	International and national institutions provide guarantees against these	

[15] For notes, see appendix – 3.

5. EXPLORING A PREMISES FOR ISLAMIC FINANCIAL INSTRUMENTS FOR BOT PROJECTS

Given the preceding background, in this section we suggest a premises for developing Islamic financial instruments for the development of infrastructures. These premises are suggested with a number of considerations.

Need for attracting international investors: At present, there is an outflow of funds, from the member countries to the Western capital markets. The Islamic banks and various Islamic mutual funds have not been able to reverse this flow. Given the estimated quantitative amounts of funds required during the next ten years, and given the long-term nature of such funds, it is more realistic that such funds can only be available from the international capital markets. The sources of these funds are international long-term investors including pension, mutual and insurance funds. Unless, the funds from the international markets are attracted towards member countries, the outflow of funds from the member country sources cannot be diverted towards member countries. The premises for developing financial instruments must cater for this fundamental requirement.

Protecting the Islamic capital markets from being undermined: The Islamic debt instruments are not tradable in secondary markets exposing long-term investments to very serious risks. Unless the problem of liquidity is effectively tackled by issuing appropriate financial instruments, international investors, particularly, Islamic ones cannot be attracted. Even if international investors are attracted they will not voluntarily hang on to non-liquid instruments. For instance, an investor holding debts in a country where its sale is prohibited may turn to another market where such a scale may be allowed. Thus, large-scale participation of such investors will create a secondary market for the debt instruments created through Islamic modes, even though such markets are prohibited by the *fiqh*.

Moreover, unless the liquidity problem is genuinely solved, involvement of conventional investors with Islamic debt instruments will create a serious competitive disadvantage for Islamic investors competing with conventional investors for investment opportunities. For instance, a project may be financed through *istiṣnāʿ* mode and the funds provided for 6 years in equal amount by an Islamic bank and a conventional bank for the same rate of return. The conventional bank may sell its debts immediately and use the funds to take another investment opportunity and the Islamic bank can get its money back only after 6 years. Furthermore, the risk profile of the two banks will be totally different. A framework for developing Islamic financial instruments must take this critical point into account and contribute to making the Islamic debts more liquid without violating *fiqh* rules.

Recognizing the securitization trends: Securitization transforms an enterprise's future cash flows into its present cash flows. If "cherry picking"[16] is avoided, securitization enables the enterprise to use its own resources more efficiently and often facilitates risk management. Appropriate securitization is equally relevant for governments, public, private and voluntary sector organizations and economic units, which are definite to hold future income generating assets. Due to the long-term nature of infrastructure investments, securitization becomes more important. Since under Islamic finance, debts cannot be sold, direct securitization of debt-based assets is not possible. The proposed premises must be able to alleviate this restriction by making the composition of assets suitable for securitization whenever the need may arise for the enterprise.

Recognizing recent developments in infrastructure funds: Recently, there has been an upsurge in index funds and mutual funds some of these specializing in the area of infrastructure finance. Most of these funds are based on returns to debt finance where investors expect a relatively secure and stable income over a long period of time. For developing Islamic financial instruments such considerations about the risk-averse nature of investors need to be kept in view.

Recognizing the usefulness of embedded options: Keeping "one's options open" is a sound strategy particularly, when the outcome of an investment decision is uncertain. The more uncertain is the future, the more useful such an option becomes. Infrastructure investments are most uncertain as discussed in the preceding sections. Hence, genuine options could be very useful to protect investors from hazards. Options are of two types – detachable options and non-detachable (embedded) options. Since in the *fiqh,* an option (right to buy or sell) is not a recognized form of asset in itself, genuine options must not be detachable and tradable. Premises for developing Islamic financial instruments for infrastructures can be more practical if it can utilize the potential benefits of embedded, non-detachable and non-tradable options.

For the above reasons, we consider that the premises of selling debts for real assets through embedded options are relevant for infrastructure projects. This framework for liquid Islamic financing instruments is described in some details below. The central points are: (a) Allowing embedded options in Islamic debt contracts wherever convenient and suitable. Such embedded options will enable the conversion of debts into real assets at appropriate future dates, and (b) allowing puttable and callable options, to facilitate a convenient exit from contracts for those parties who may choose to do so. This framework facilitates a number of benefits.

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[16] Firms using securitization have the tendency to pick up good assets for securitization thus creating a serious liability and asset quality mismatch. Genuine securitization must avoid such cherry picking.

First, it can genuinely make the debt instruments liquid as in good state of projects debts will be converted into the project's real assets. This will facilitate securitization. By reducing the liquidity problem it can alleviate the risk of undermining the sale of Islamic debt instruments by international investors having lack of concern in this regard.

Second, the framework facilitates numerous theoretical possibilities of developing financial instruments. As the trend in the finance arena is towards unbundling of risks into bits and pieces and designing financial instruments for each type – the flexibility introduced by the premises has the potential of meeting such levels of sophistication.

Third, utilization of genuine options can be facilitated. This will enable enterprises to pursue suitable strategies with respect to investment decisions; particularly they will be empowered with risk management instruments.

Towards enhancing the liquidity of Islamic debt certificates: The general framework for the issuance of Islamic financial instruments is that these instruments can represent share in equity, real assets, usufructs, money or debt or a combination of some or all of these. However, only instruments representing real assets and usufructs are negotiable at market price. Instruments representing debts and money are subject in their negotiability to the rules of *ḥawālah* and *sarf* and instruments representing a combination of different categories are subject to the rules relating to the dominant category (if debts are relatively larger, to *ḥawālah al-dayn*; if currency is larger, to *sarf* and if real/physical assets and usufructs are overwhelming, to selling at market price).

Within the framework of the security package, private infrastructure projects require diverse financial instruments for meeting financial needs of the projects as well as for risk management. Fortunately, Islamic scholars have paid substantial attention to develop financial instruments for resource mobilization.[17] Here we work on the contributions of Zarqa (1998) to explore suitable instruments for financing BOT projects.

Unlike the full-recourse traditional public sector projects, which rely only on debt capital, the new private stand-alone projects require capital at all tiers – equity, mezzanine and debt. To effectively replace conventional mezzanine and debt capital, suitable Islamic instruments need to be designed. Among these three forms, mezzanine finance plays a unique and important role by holding equity and debt together. In the traditional case, the permanent owners of the Concession Company choose to give priority to the providers of their mezzanine finance in the

[17] See, for example, Ahmad, Ausaf and Tariqullah Khan (eds) (1998).

distribution of profits if the projects generate net revenues. This is in addition to normal interest payments.

Due to the important role played by mezzanine finance, one important aim of the Islamic Development Bank sponsored Infrastructure Fund[18] is to provide this type of finance to stand-alone infrastructure projects by means of installment sale, leasing and *istiṣnā'*. Convertible mezzanine finance is usually called "equity kickers" because such funds ultimately transform into equity by means of convertibility features (see, UNIDO 1996).

Although preference to one party at the expense of the other cannot be acceptable in Islamic finance, considerations underlying the mezzanine finance are also relevant for all the three Islamic modes - installment sale, leasing and *istiṣnā'*. Here we discuss the liquidity-enhancing role of mezzanine finance concentrating on *istiṣnā'*. Since in *istiṣnā'*, the price and object can both be deferred, it makes this contract unequivocally more flexible as compared to leasing and installment sale. Let us consider a perpetual infrastructure franchise, which is financed by *istiṣnā'* and the IOUs are owned by a large number of investors in the form of *istiṣnā'* debt-certificates (IDCs) as discussed in Zarqa (1998).

Since the IOUs/IDCs cannot be sold in secondary markets, these must be kept by the owners till maturity. Normally, we expect the funds to finance infrastructure projects to be of long-term maturity. Due to such long-term maturity, there are many risks embedded in the IOUs, namely price risks, exchange rate risks and default risks. Unless these risks are properly controlled, long-term finance will be costly to provide and Islamic financial institutions will continue to provide very short-term funds. How to control the embedded risks in the IOUs? The most effective way to counter the embedded risks is to embed in the IOUs risk-countering options. There could be numerous such options. We mention a few here as examples. During a specified time prior to the maturity of the IOUs but after completion of the project, the holders may exchange their IOUs for:

- A specified amount of output of the perpetual franchise infrastructure project.[19]
- Stocks of the franchise.

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[18] The 1.5 billion US dollars Fund was launched in1998. IDB is the principal sponsor of the Fund and has initially committed US dollars 250 million. Dar Al Mal Islami (DMI) is the lead sponsor and has committed US dollars 200 million. The Fund is a limited partnership with a targeted equity capital of US dollars 1 billion and complementary Islamic finance facility of US dollars 500 million. The minimum contribution is set at US dollars 10 million. The Emerging Markets Partnership (EMP) a Washington based Asset Management Company specializing in the area has been appointed as manager of the Fund (For details, see IDB: Al-Manar No. 72 1998 and ES&SP 1998).

[19] For example, if the franchise is for power generation, the owners of the IOUs can exchange these IOUs for units of electricity as a price offered on the IOU as an embedded option.

- Stocks in the subsidiaries or peers of the franchise.
- The franchise backed by the sovereign guarantee can supply other goods, for example wheat against the IOUs.
- Put back the IOUs to the franchise and rescind from the contract.
- The franchise can call back the IOUs.
- Indeed, the IOU-owners may not utilize any of the above options and may wait for the maturity of the original contract.

The *istiṣnā'* certificate is merely a debt certificate which cannot be traded. The other assets mentioned above are real assets. Debt can be exchanged for real assets. Given that condition, the embedded offers can be added with different combinations. For, example, some IOUs may contain all offers simultaneously, leaving the choice to the discretion of the owner. Other IOUs may have the first and the fourth offers and so on.

The important point to emphasize is that there are potential benefits from developing the concept of *bay' al-dayn bil 'ayn* (sale of debt for real-assets) as an asset securitization device. Here we explain the rationale of such a suggestion with one specific example. Suppose that the National Highways Franchise Corporation (NHFC) in a Muslim country, takes mezzanine finance on the basis of *istiṣnā'* from an investor (local Islamic bank, LIB) to construct a new toll motorway. Accordingly, the LIB (through its sub-contractor) constructs the tailor-made motorway for a specified amount of funds, which the NHFC will pay in the future in installments starting from the 8th year of the contract. However, the NHFC offers to write in the contract document that if the LIB may so desire, after the second year of the completion of the motorway, it may buy shares of the NHFC, for instance at dollars 14 per share using the IOUs. With respect to the IOUs of 8^+ years maturity, the investor has now two options to choose at free will – wait for 8^+ years to receive back the cash or after 2 years buy shares in the NHFC at $14 per share. If the investor considers that the embedded risks of the IOU for 8^+ years are high, he can convert the IOUs into real assets of the NHFC after two years at the offered price of $14 per share. The promise given by the NHFC is binding on it but it is not binding on the LIB. The binding offer is thus a call option on the NHFC owned by the LIB. However, it is crucial to note that this call option has no market price of its own, as it cannot be separated from the initial contract with which it is embedded. Thus it does not create a derivative as such and does not violate OIC Fiqh Academy prohibition of trading in financial derivatives.

Obviously, the arrangement can be refined from many aspects by involving investment bankers, by securitization, by syndication etc. Moreover, there are several strong economic arguments in favor of such financial instruments both from the perspective of the NHFC and the LIB. Such arrangements would be

extensions of the premises of the convertible mezzanine finance with some suitable modifications for *Fiqhi* compliance. A number of obvious benefits of the arrangement are easy to visualize.

The *istiṣnā'* IOUs and all other Islamic debt certificates, discussed in the literature are similar to zero-coupon bonds in the sense that no coupon payments are made on these IOUs. Furthermore, these Islamic certificates are illiquid, as debt instruments cannot be traded. In a zero-coupon, the principal and the profits are added together to be paid at the maturity date. In this sense zero-coupons are also illiquid instruments. To make the zero-coupons more liquid, convertibility and other options are added. The embedded Islamic debt certificates are thus similar to zero-coupon convertibles available in the conventional markets. These financial instruments simultaneously contain a number of embedded options, namely, convertibility options, call option and put option. The embedded options make the bonds highly liquid. These are thus some of the most popular financial innovations of the recent past with a thriving market. For the same reasons, *istiṣnā'*, installment sale and leasing certificates with the embedded convertibility and other options are hence to be liquid.[20]

The above premises provide for the necessary ingredients of a comprehensive institutional framework of Islamic financial instruments for infrastructure projects. The foregoing analysis suggests that Islamic finance is capable to take the challenge of financing infrastructure projects efficiently. The above premises are also applicable to liquid yield installment sale certificates and liquid yield *ijārah* certificates.

Such instruments shall be developed and implemented by specialized country funds for infrastructure projects using the experience of existing funds. Indeed, these are extremely complex arrangements and cannot be undertaken without encouraging and promoting a large scale and critical role for investment banks. If pursued, this process will have a number of benefits.

- The framework caters for most common financing requirements of infrastructure projects including the simultaneous need for various types of finance – debt, equity and mezzanine while at the same time being conscious for the requirements of Islamic finance.
- Debt-equity swaps are often recommended as an important solution to overcome the foreign debt problems in several Muslim countries, which aspire at Islamization of their financial systems. In the proposed arrangement such prospects are in-built. Hence, the scheme can overcome several problems of the debt transformation programs - the

[20] See, Kolb (1992) and McConnel (1992).

problems being originating from debt-pyramids and the programs' ex post nature.

- The scheme can also contain an in-built automatic stabilizing feature. For example, due to the embedded option feature, the owner of a certificate can rescind it to the issuing authority, during a certain period of time. In boom periods, the owners would prefer to utilize this specific option so that they can re-invest the funds in other high income earning opportunities. In periods of economic slowdown there would be no such incentive to utilize the option. Utilization of the rescinding option by the certificate holders is equivalent to the purchase of financial instruments by the public authority (a restrictive open market operation). Therefore, some embedded option features can work as automatic open market operation mechanisms.
- Dealing with defaulters is one of the central problems of *dayn* (Islamic debt) financing. The proposed scheme has again an in-built mechanism to mitigate this problem, i.e., assets of willful defaulters can be taken over automatically by the financiers.
- *Dayn* financing plays an important role in the Islamic financial system. Ideally, such financing has to be created by the traders. However, in the present practices of Islamic financial institutions, in the final analysis, the depositors provide *dayn* financing. The proposed scheme also mitigates this and provides a mechanism for spreading the burden of *dayn* between different contractees.
- The existence of the agency problem is common with procurements through installment purchase particularly, *istiṣnā'* types of arrangements, which makes contract enforceability difficult. The convertibility option could provide incentives for better performance, as the constructors are the prospective shareholders of the projects. For this incentive consideration, *istiṣnā'* contract could be more efficient with the convertibility option as compared to the one without it. In countries, which are facing serious genuine difficulties in introducing the Islamic financial system, such a possibility is expected to alleviate several difficulties.
- The arrangement's risk dissipation aspects for the issuing authority as well as for the investor are also clear. The ultimate goal of the authority is to securitize the project. The investors' market risks are fully hedged for this investment. The maximum down side of its investment cannot go bellow the straight *istiṣnā'* debt which is guaranteed. The favorable side is the better performance of the stocks of the authority, particularly due to the addition of the project in the national assets.

- Under the scheme, financing is essentially restricted to real assets and actual projects. It does not allow detachment of the option. Thus, it will be an effective control of speculation, which has been a serious problem due to detachable options.
- The core limitation of all the Islamic debt certificates (*shahādat al dayn*) is that these cannot be sold and discounted. Therefore, these are not liquid. The proposed arrangement has the potential to effectively overcome this limitation of the debt certificates. In our specific example, the potential of the arrangement lies in that whosoever will own the *istiṣnā'* certificate may buy shares in the issuing project. Under conditions of good performance by the project, the arrangement will thus make the certificates liquid.

5. CONCLUSIONS

In conclusion it may be mentioned that the requirements of funds for the development of infrastructure through BOT arrangements are huge and diverse in nature. Therefore, all possible *fiqh*-compatible methods need to be explored to attract funds into infrastructure projects of member countries. This paper has discussed various aspects of the subject. The conclusion is that by proper exploration of the Islamic premises, we can suggest in general that diverse financial instruments are possible to develop to meet the various needs of infrastructure project finance. However, only practitioners can develop specific financial instruments by keeping in view the needs of specific projects.

Appendix-1

Profile of Private Infrastructure Project Finance Structures and Relevant Contracts

Structures	Description
1. Affermage (Comprehensive Lease)	Sale of use rights of projects for a specified price (rent) and time in a comprehensive form and bundled together.
2. Built-Operate and Transfer (BOT)	♦Project specification by public authorities, ♦Project development and operation by private parties with full responsibility ♦Private parties cover their capital cost and expected earnings from the project revenues ♦Purchase of project output is guaranteed by the government at a specified price ♦Public authorities provide very limited financial accommodation but substantial market and other risk coverage ♦Transfer the project to public authorities after a specified time and without any liabilities due.
3. Build, Operate (BO) & Renewal of Concession (BOR)	The most popular in Muslim countries. It is a BOT, but with an option to re-negotiate the agreement of renewal of contract for operation at the end of a contract period and before transfer.
4. Build, Own and Operate (BOO)	♦Specifications by public authorities ♦Design, finance, development and ownership by private party with full financial obligations ♦Generally, such cases are permanent franchises in which the private party keeps ownership until its performance on obligations is seen satisfactory by the franchiser
5. Build, Transfer and Operate (BTO)	♦Design, finance, development by private on orders from public authorities on turnkey basis ♦Ownership transferred to public authority ♦Operated by the private party for a limited period for fees/revenue sharing etc. ♦Financial obligations of public authority limited
6. Build, Transfer and Lease (BTL)	BTO but to be leased back to the private authorities for a specified time.
7. Buy, Build, Operate (BBO)	♦Existing public project is bought by a private firm ♦Modernized rehabilitated and operated ♦Specifications for modernization by the government
8. Buy-Backs	Private party supplies equipment/plants to public party and buys an apportioned output at lower than market price.
9. Lease, Develop, Operate (LDO)	♦Affermage of an existing facility plus its surroundings ♦Fixed term revenue sharing ♦Specifications by the government
10. Off-Take Contract	Agreement for the purchase of the output of a project for a specified price for a specified period – e.g., a power purchase agreement (PPA).
11. Operation & Maintenance (O&M) Contract	♦Contractors or other parties take the responsibility of the operational efficiency of the project ♦The risk of the private party with regard to operation and maintenance is covered
12. Perpetual or Non-perpetual Franchise	♦Development and Permanent ownership of all assets by a private firm, ♦ Financial obligations private ♦ Regulation by government of service quality, user charges and profits ♦ Perpetual good for securitization

Structures	Description
13. Power Purchase Agreement (PPA)	♦In public motivated private power projects the public authority guarantees to purchase electricity at specified price for specified time ♦producer's market risk is covered
14. Production in Hand Contracts	Foreign firm delivers on commercial basis a production unit producing a known quantity and quality of particular output.
15. Production Sharing	Sharing of output of a project by public and private parties in return for capital, technology etc., or for project development by the private party.
16. Profit Sharing	A joint venture in which the accrued profits and losses are shared by the parties on *pro rata* basis.
17. Rehabilitate, Own and Operate (ROO)	♦Existing public project given over to a private firm for rehabilitation ♦Private firm will own the project until it meets the initial conditions.
18. Rehabilitate, Operate and Transfer (ROT)	Re-habilitation of existing public facility to meet specifications by a private party for its revenues during a specified period.
19. Revenue Sharing	Sharing a proportion of revenues by sharing mostly an infrastructures project
20. Speculative Development	♦Private firm identifies public need and proposes a project around it ♦Public authority joins in with some form of support and partnership.
21. Sub-Contracting	Production of parts and components by an agent for a principal on order. Parts to be used at the exclusive risk of the principal.
22. Take – or – Pay Contract	♦Often incentive by public authority to private firm to develop projects with public specifications ♦The public authority as purchaser of the services agrees to pay specified amounts even if sometimes the public utility may not receive all paid for.
23. Temporary Privatization	♦Existing public property taken over by private firm for a know period ♦Private firm undertakes renovation, expansion etc. ♦Private firm fully and independently utilizes the project and bear all risks for a specified period.
24. Turnkey Contracts	Construction and transferring over to a local party by a foreign party an investment project for a specified price.
25. Use-Reimbursement	♦Public authority specifies a project and identifies a revenue stream from the project. ♦The expected revenue for an appropriate time is paid by the public authority to the project initially ♦The private firm after collecting the revenues overtime reimburses the public contribution.
26. Value Capture	♦Private firm improves transportation in an area ♦Value of sounding property increases ♦This value is taxed and the revenues are used to meet capital cost of the project.
27. Wraparound Addition (WA)	♦Expansion of existing public facility by private firm ♦Ownership of extension private ♦Joint ownership risk sharing ♦Operation by the private firm.
28. Construction Contract	Contract(s) for the construction of the project on turnkey or production in hard basis.
29. Transfer of Operational Rights (TOR)	Private company receives an existing facility against a transfer fee in favor of the government, manages, operates, maintains, invests and finances on the facility during the period and at the end of the TOR period returns the facility back without any cost or liability.

Source: Adapted and updated from: Khan, Tariqullah (1991).

APPENDIX - 2
Potential of BOT Projects in IDB Member Countries

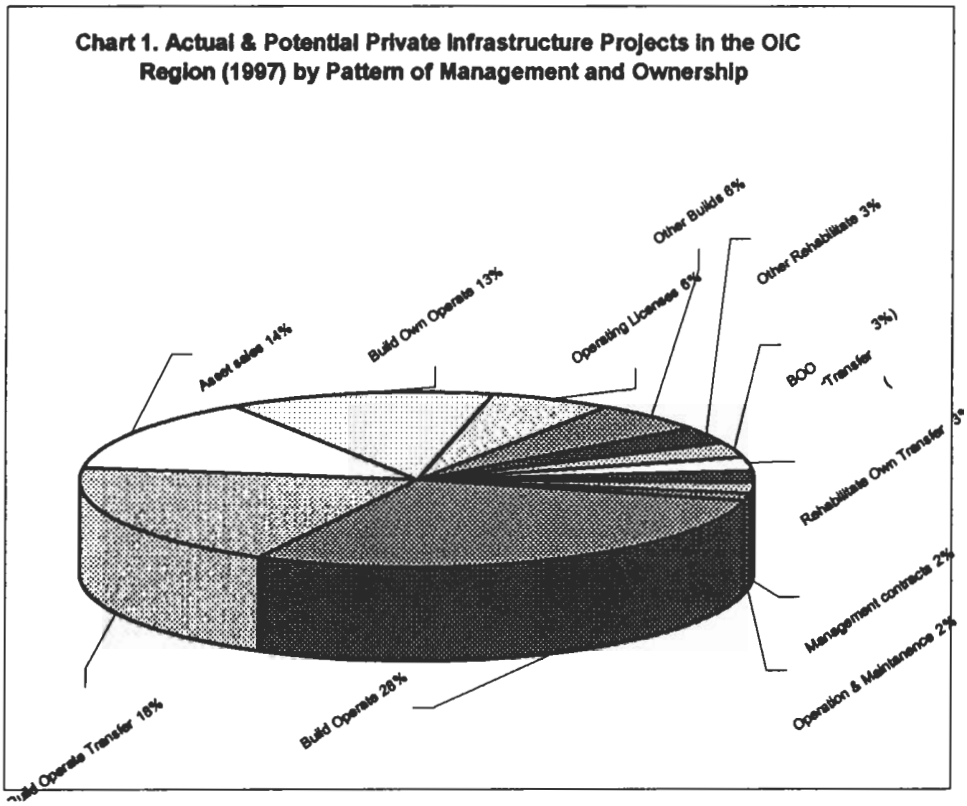


Chart-2. Total Actual and Potential Infrastructure Projects in the OIC Region (1997) by Ownership Pattern (billion US dollars)

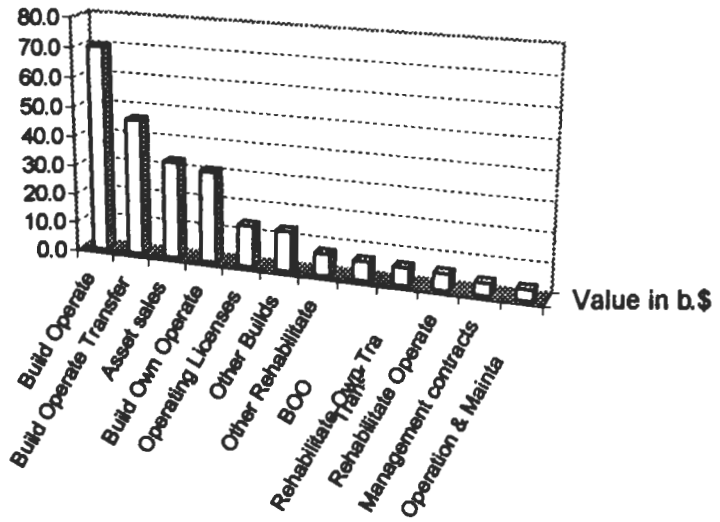
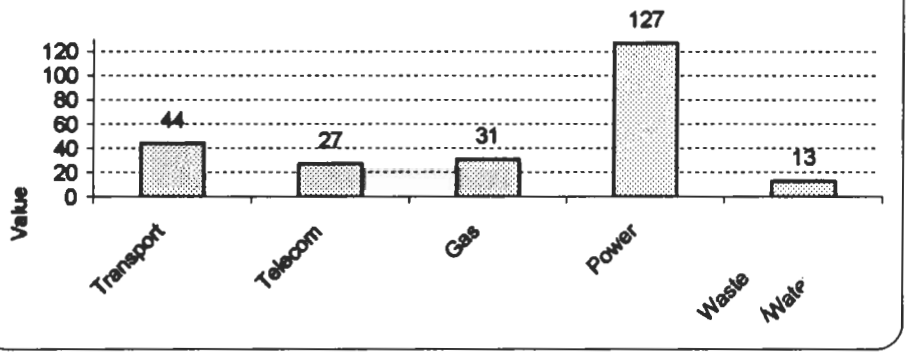


Chart-3. Total Actual and Potential Private Infrastructure Projects in the OIC Region (1997) by Sector in (billion US dollars)



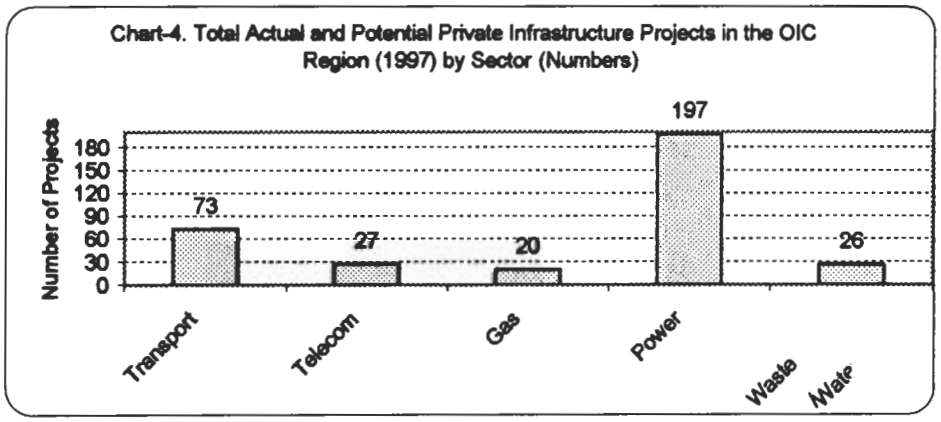


Chart-4. Total Actual and Potential Private Infrastructure Projects in the OIC Region (1997) by Sector (Numbers)
Number of Projects
180
150
120
90
60
30
0
73
27
20
197
26
Transport
Telecom
Gas
Power
Waste
Wate

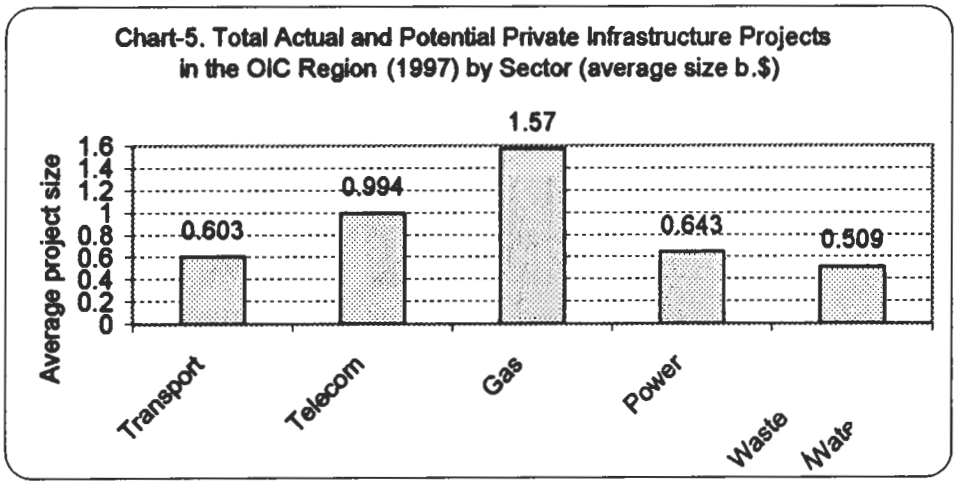


Chart-5. Total Actual and Potential Private Infrastructure Projects in the OIC Region (1997) by Sector (average size b.$)
Average project size
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.603
0.994
1.57
0.643
0.509
Transport
Telecom
Gas
Power
Waste
Wate

Appendix-3

Notes to Fig-1 & Exhibit-1

1. ***Mushārakah*** and ***muḍārabah*** capital plays a critical role in establishing the Concession Company. ***Mushārakah*** capital is provided by the shareholders of the company, normally the project promoters and permanent owners. This capital represents the majority shareholders of the Concession Company. ***Muḍārabah*** capital is brought in by mutual funds, pension funds and other types of long-term investors. These are normally temporary and minority shareholders of the Concession Company. Recently there has been an upsurge in infrastructure funds where the fund owners are silent partners and the fund managers invest them in infrastructure concession companies. These funds are "drawn down" phase-wise and in accordance with a pre-determined timetable and set-procedure given in security package. Normally the utilization of funds starts from shareholders' ***mushārakah*** capital at the initial and most risky phase of the project. The time for utilization of ***muḍārabah*** funds arrives at latter less risky stages of completion of the project. Finally, the least risky phase of re-financing is arranged by revenue sharing. The security package has to clearly spell out what type of funds will be used at what stages and in what combination with debt capital.

   The Project Company is the manager of the project appointed by the sponsors. The contract for the concession agreement is signed between the host government and the Project Company. This is a critical area where Islamic financing has to accommodate the developments in the area of infrastructures project finance, because, the relationship between the host government and the project company cannot be explained within the framework of any of the traditional Islamic contracts. In general, the construction contract is somewhat similar to *istiṣnāʿ* but it is not the exact *istiṣnāʿ* as known in the *fiqh* literature. The security package will require a very clear and unambiguous definition of contracts (see Appendix-I for a list) involved in the process. Since private infrastructure finance is "contract finance", it is absolutely critical that a consensus on the issue of definitions is reached among *fiqh* scholars so that the security package can be clearly understandable among various parties.

2. Production-sharing is mostly applied in the exploration of natural resources - oil, gas etc. In this arrangement, there are three major risks. Recoverable reserves cannot be exactly measured, price of output is uncertain and operating costs of the exploration process may exceed estimations. To mitigate these risks there may be a formal contractual arrangement, providing various possibilities to: (a) pay the contractor some multiple of the costs it has incurred, if a commercial field is not discovered, (b) payment of a fixed fee per barrel (unit) or a share of the value of the oil (product) produced, (c) pay the foreign firms' shares not in kind but in cash, (d) guarantee selling the output at an agreed price, or (e) resort to revenue sharing.[21] Revenue sharing is normally used in re-financing the project as examined in the Turkish case of RSBs. This principle is applicable to all public utility projects, which generate revenues such as toll-roads, bridges, power projects, airports, seaports etc. It will normally be implemented by a special purpose vehicle, which will manage the collection and disbursement of revenues for a fee.

3. In general, pre-paid procurement of goods, assets and services is of limited application to new cash-hungry Concession Company. However, the public utility can always explore to arrange purchase of the project output on the basis of *salam*. This will provide substantial financial support to the Project Company. In case that is lacking, the sale of electricity or revenues of a toll-road can be securitized by the public utility (see next section of the paper). For example, if a toll-road or power project has to be established with good revenue

[21] See more on this in Lessard (1986).

forecasts, the Project Company can raise cash by securitizing these revenues in advance. Once the project is in place such a securitization indeed becomes convenient.

4. Foreign investment is crucial for infrastructure projects in many ways, namely for the purchase of foreign equipment and other necessary technical and material inputs. Generally, the export credit agencies located in jurisdictions of the foreign investors provide export credit guarantees. In Islamic financing, the need for this will increase, because the reliance on installment sale, *istiṣnā'* and leasing will increase. Since guarantee arrangements are critical to protect the interests of the foreign investors these need to be incorporated in the security package clearly and suitably for specific projects.

   Equipment suppliers play an important role in supplying equipment to infrastructure projects often on the basis of leases. Because of the emphasis on leasing and installment sale, the direct role of the suppliers will increase under Islamic financing. This also needs to be included in the security package.

   Long-term funds, for developing countries' projects are normally provided by multilateral development financing institutions and multinational commercial banks. The role of the Islamic financial institutions will increase. But it is in the interest of the Islamic financiers to involve multilateral development financing institutions and multinational banks, so that sovereign risks can be minimized. It can be expected that most of these institutions understand Islamic project financing through *istiṣnā'* and installment sale as many of them have already been operating Islamic banking windows. The security package needs to clearly cover these considerations in case any syndication is arranged.

   Istiṣnā' will play significant role at different levels. One of the important places for *istiṣnā'* is evident from the fact that most infrastructure projects need several sub-contracting arrangements. The problem of procurement through sub-contracting is the moral hazard; suppliers often supply sub-standard projects. To motivate sub-contractors to provide projects according to agreed specifications, compensation schemes have to be compatible with the incentives of the sub-contractors. One way of achieving this as mentioned in case of the NSH is the arrangement in the security package a condition through which the sub-contractor can acquire ownership in the project in case the project succeeds. These conditions need to be clearly defined in the security package for specific projects.

5. Mezzanine finance plays an important role in financing private infrastructure projects. As infrastructure projects involve very long-term investments, these are very risky; the expected returns can be very high and successful projects can be listed in the stock exchanges. Therefore, the investors are encouraged by a provision in the debt contract, which leads to conversion of debt into equity at the discretion of the financiers. These arrangements protect the investors as well as provide them with opportunities in the long run. In the last section of the paper we have developed an outline of how mezzanine finance can be organized based on *istiṣnā'*, leasing and installment sale contracts. These arrangements need to be incorporated suitably for specific projects as ingredients of the projects' security packages.

   Investment banks also play critical role as intermediaries between the Project Company and arrange long-term funds. In various cases, investment banks arrange securitization of the revenues of infrastructure projects. The role of investment bankers is expected to increase in the application of Islamic modes of finance to infrastructure projects. Again specific requirements will depend on specific projects.

6. Host Governments through the public development financing institutions have played an important role in financing infrastructure projects. These organizations have accumulated valuable experiences in these areas. The experiences can be utilized in providing financing

compensation to the private infrastructure projects at minimal financial cost to the host Governments. For example, many governments provide soft interest-free loans to private infrastructure projects. In most cases land is provide by the Government as a grant. These arrangements and other related issues such as guarantee of foreign exchange repatriation by central banks need to be specifically included in the security package.

The local public sector in most Muslim countries is capable of providing finance through Islamic means by way of leasing, installment sale, *istiṣnā'* as well as participatory modes, particularly, declining participation. In the same manner the local/commercial institutions can use these modes to provide finance to the Project Company. The security package needs to specify such arrangements.

7. The best example of an input supply is that of furnace oil to a power-generating company. In Muslim countries, governments generally regulate oil prices. The prices of electricity generated by using oil will heavily rely on the input cost of oil. Therefore, domestic input suppliers to power companies need to guarantee suitable input price for a specified time. Oil can be supplied by using the Islamic modes of financing like *salam* by the input supplier or installment sale by a financier. Reliable information about these factors needs to be included in the security package.

The output of an infrastructure project can only be consumed locally and cannot be exported. Therefore, the Project Company cannot manage the output generated by an infrastructure project. There is a very high risk for the Project Company to take the responsibility of selling the output at a suitable price. Unless the government, through a public utility, by means of a power purchase agreement mitigates this risk, it is not possible to initiate the project. Therefore, the security package has to contain a detailed account about the prices of the output and the transfer of revenues from the public utility to the Project Company on regular basis within the framework of a sovereign guarantee.

The Organization and Management (O & M) contracts also play critical role in the success of private infrastructure projects. Often in a single project, various O & M contracts are involved. The responsibilities in these contracts need to be clearly defined and made part of the security package; with ingredients from the *muḍārabah, mushārakah* or *ijārah* specifications wherever relevant.

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